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Abstract

RECENT DEVELOPMENTS IN THE APPLICATIONS OF METEOROLOGY TO REACTORY SAFETY

by

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Recent advances in nuclear technology have required, and produced, new meteorological tools and techniques which contribute to more refined evaluations of reactor site suitability, more precise estimations of the atmospheric dispersion, and new techniques of measuring air flow.

There is a growing tendency to design meteorological programmes to match the scope and particular problems of specific nuclear installations.

Among the new approaches to reactor siting which are described are nation-wide analyses of vertical lapse rate and methods for determining the persistence of wind regimes. The use of conventional meteorological observations to infer diffusion regimes is described and illustrated for several locations.

Use of wind fluctuations to obtain diffusion coefficients has been improved and empirical techniques developed that permit use of conventional wind systems.

Smoke photography techniques that permit quantitative analysis are described, together with illustrations of the field use of particulate tracer techniques in special problems.

One of the newest meteorological techniques for application to nuclear sites is the use of balloon borne radar beacons to obtain air trajectories and diffusion data over ranges up to 100 miles. This technique, and its potential, is described in considerable detail.